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ABSTRACT

This paper reports on how factors related to students' impending graduate medical education (GME) influenced the design of their individual curricula in an alternative medical education program. Ten students of the Independent Study Program (ISP) of the College of Medicine at Chicago/University of Illinois participated in the study through in-depth interviews and school records. Analysis of ISP students' bases for curriculum construction suggested that the selection and organization of clerkships, and in particular electives, were designed to address a set of concerns students had about the upcoming GME. The interviews also revealed that the selection and organization of learning experiences were tailored to enhance students' chances of acceptance by desired residency programs. A perception of what knowledge and skills would be most valuable for successful performance as interns or first-year residents also impacted on the selection of learning experiences by ISP students. (MDM)

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**The Influence of Graduate Education Concerns on Individualized Curricula in an
Alternative Medical Education Program**

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Raymond L. Olesinski

Abstract

The selection and organization of clerkships by students in an alternative curriculum was influenced by concerns about graduate medical education (GME). These involved determining a GME specialty, deciding for which programs to apply, enhancing admission to programs and preparation for competent GME practice. A pattern of early completion of electives in the third year was explained mostly by the needs of students to address their GME concerns. When students addressed certain concerns was related to when they determined their GME specialties. The findings are contrasted with previous literature on GME concerns and discussed in relation to students' career paths.

This paper reports on how factors related to students' impending graduate medical education (GME) influenced the design of their individualized curricula in an alternative medical education program. Students of the Independent Study Program (ISP) of the College of Medicine at Chicago/University of Illinois have considerable latitude to develop individualized curricula which have been shown to deviate considerably from that of a coexisting traditional curriculum (Olesinski, Coulson & Nelson, 1991). The report below presents the results of further investigation into the process of curriculum construction by a group of ISP students.

Methods

In-depth interviews with an informant sample of ISP students were conducted to gather data about curriculum construction during the third and fourth years of undergraduate medical education. Ten of the 19 senior students of the 1991 and 1992 graduating classes who participated in the ISP were interviewed. Interview transcripts were coded and analyzed using previously explained methodology (Glaser & Strauss, 1967; Strauss & Corbin, 1990). Although the interviews served as the major sources of data, data were also collected from other sources to supplement the interviews. Data on ISP and traditional curriculum student academic achievement and other characteristics were supplied by the Dean's Office of the College of Medicine at Chicago. That office also provided a listing of the courses completed by each ISP student, their starting and ending dates, and instructional sites. The latter proved useful for a number of reasons by helping to improve the students' recall of details about the selection and organization of their learning experiences, by indicating prior to the interviews interesting course selections, patterns of organization or deviations from the traditional curriculum and by corroborating the interview data. In addition, the ISP students volunteered copies of documents, including their initial curriculum plans and other materials related to the ISP application process. Other initial curriculum plans were obtained through the Dean's Office and used with the permission of the students.

Results

The informant sample consisted of five male and five female students. Only one of the ten students (Pamela)¹ had graduate school experience prior to entering medical school. Six of the students completed or planned on completing their undergraduate medical education in four years while the remainder extended their education an extra one to two years. At the time of the interviews 6 students (Elizabeth, Jane, Nick, Pamela,

Peter and Robert) had completed all coursework, but had not yet graduated. The medical education of the remaining four students (Alecs, Berndt, Jessie and Rick) was still in progress. The mean undergraduate grade point average (on a five point scale) for the informant group was 4.49 (range=3.64-4.97) while the mean Medical College Admissions Test score was 10.60 (range=8.33-12.83).

The students' operational, or implemented, curricula, represented by clerkship completion, sequencing and duration patterns, were distinctly different from the traditional curriculum. The major differences were:

1. Elective clerkships were completed early in the third year
2. Major clerkship experiences were deferred until the fourth year
3. Major clerkships were diminished in length or eliminated completely

Early completion of elective clerkships consisted of electives completed within the first five clerkships of the third year. Traditional curriculum students were not allowed to schedule electives during this time, but were required to complete 5 major clerkships of 48 weeks duration in continuous sequence during this time.² Also, traditional curriculum students could not defer, eliminate or alter the duration of the major clerkships. Because the diminished duration or elimination of major clerkships was related primarily to students' perspectives on their general medical education and not to their GME, these factors are not addressed in this paper.

Analysis of ISP students' bases for curriculum construction suggested that the selection and organization of clerkships, and in particular electives, were designed to address a set of concerns students had about their GME. These concerns were categorized as follows:

1. Choosing an area of specialization
2. Deciding to which programs to apply
3. Enhancing the likelihood of admission to desired programs*
4. Preparing for GME practice

Items 1-3 above represent a set of pre-graduation concerns, i.e., the impact of curriculum decisions based on these concerns would be felt before graduation. Item 4 is categorized as a post-graduation concern.

Twenty early electives were completed by the ISP students (range of electives completed/student = 1-3). Analysis indicated that the bases for selecting 15 of these were related to addressing particular GME concerns.

All of the ISP students had completed at least one elective course by the time they had completed their fifth course in their third year (three as the first course; five as the second; two as the third).

Selecting a Graduate Medical Education Discipline

Which GME concerns were addressed and when was related to when a choice of GME specialty was determined. Students could be placed into four categories depending on when they knew for certain what medical specialty they were interested in pursuing and/or how they used their curricular options to determine a specialty discipline. The groups are defined as follows.

Group 1: Students who had decided early on, even prior to the beginning of medical school, what specialties they would pursue, did not change their choices (by the time of the study interviews) and focused their curriculum on their chosen specialties.

Group 2: Students who had initial interest in a particular graduate specialties, but decided to use early exposure to these interest areas to verify their choices and/or to sample other specialties, keeping an open mind to the possibility of changing the specialty.

Group 3: Students who thought they knew what specialties to pursue, but eventually changed their choices for unanticipated reasons.

Group 4: Students who had no firm, early convictions as to what their graduate specialties would be and became a "samplers" trying to determine an interest through exposure to various specialties.

The following exemplify the perspectives of students in Groups 2-4. Elizabeth, a Group 2 student, commented

I remember being interested in it [ophthalmology] probably before I went to medical school. I was never really that committed to it because I wanted to keep my mind open and see what else was out there.

Jane, another Group 2 student, who knew she "would be interested in radiology from the beginning," selected a radiology elective as the first course in her third year and was eventually accepted to a radiology residency. But although she had an early inclination that she would pursue radiology she was not entirely certain.

...I really wanted to do various types of radiology...to expose myself more to the field because I thought I would like it, but I wasn't sure. I hadn't really seen it from this other point of view [of clinical practice].

She had also intended to take a course in emergency medicine and did complete a course in physical medicine and rehabilitation because these areas represented potential alternatives for graduate specialization.

Another Group 2 student commented

Early on I thought that I wanted to do a residency in emergency medicine and I knew that I really wouldn't be exposed to that in the curriculum until the fourth year, so I thought that it made sense to get into a program that allowed you the flexibility to see if I liked emergency medicine because I wasn't very familiar with it.... (Jessie)

After exposure to emergency medicine, however, this student decided to reconsider her residency interest: "I was exposed to people in emergency and seeing what's going on...[and] this is not my mindset." Interestingly, after deciding that her new area of interest was physical medicine and rehabilitation she opted for an exposure to this field as soon as possible in order to confirm her new choice.

Nick is representative of a Group 3 student. He initially went to medical school with the idea of specializing in ob/gyne, but changed his mind unexpectedly.

I actually went in with the idea of going into ob/gyne. The more I thought about the legal matters and the constant on-call life style, that was not appealing.

Nick began seriously thinking about pursuing a residency in emergency medicine during his experience in the medicine major clerkship. His curriculum profile reflected his emphasis on this new choice of specialization.

Pamela typifies the Group 4 student. Much of her undergraduate education had been spent trying to decide on a specific area in which to specialize. Pamela became a sampler of courses in various disciplines because of this. This series of comments underscores this point

I was thinking about medicine at that point. I knew I didn't want to do surgery [for a residency]. I had thought about family practice, but it just seemed too broad.

I was also thinking about pediatrics.

So he would come home [her husband] and tell me that's the thing to go into. So I said alright. He wanted me to check out derm and anesthesiology, radiology.

At the time of her interview, although she had completed all of her coursework, she was still wavering about what her specialty would be. When asked about this, she responded

I've selected? I didn't select anything. I decided that I didn't think that pediatrics made any sense for the long term...So I'm going to apply to medicine, adult medicine, internal medicine, and I'm also going to apply to radiology. Most radiology programs require a year anyway of medicine.

Enhancing the Chances of Acceptance to Residency Programs

The selection and organization of learning experiences were also tailored to enhance students' chances of acceptance by desired residency programs. Students attempted to develop a competitive edge, something that would make them more attractive than other students to residency programs. They believed or had received advice that early exposure in their selected specialties would help to accomplish this. In particular, an early exposure would provide them with grades in these specialties that would be on their transcripts at the crucial time of application to residency programs.

I knew I would be interested in radiology from the beginning. My advisor was _____. I talked to him about it and I realized that radiology is a very competitive specialty. [I asked him] "What can I do to advance my position as a candidate?" And he said, "I would suggest that you get involved in radiology as soon as possible. I would suggest that you start your [radiology] clerkships earlier than in your senior year.... (Jane)

I wanted to do that [surgery clerkship] then because, first of all, I was told that you should do your surgery earlier by other students because you want to get letters for your residencies and your grades. If you did it as your last junior clerkship there's a good possibility that your grades and letters from attending, that you wouldn't be able to get them in time [for residency application]. (Rick, who pursued a surgery residency)

Another way in which they attempted to do this was by choosing to complete electives at the institutions to which they would be applying for residencies. This was done for the purposes of achieving name recognition—making the program's faculty aware of the student—and showcasing—showing the program's faculty that the student could perform competently in the specialty discipline. Typical comments related to these purposes follow.

And in very competitive residencies, in an area like emergency medicine, you have to have gone to the place where you want to get a residency in, and show your stuff. (Robert)

First of all, one of the guys that was on my thesis committee was there and I had asked him to write me a letter of recommendation and I figured it would be easier for him to write me a letter of recommendation if I were there. He knew me from my research, but not from clinical medicine. (Berndt, on why he chose to do a radiation oncology elective at a particular instructional site)

I wanted to see what the _____ residency was like and to see how the people there handled it and if I liked it there. Mostly for getting my name known there also. Trauma at _____, a similar reason, to get my name known there.... (Jessie)

By now I fully know that I'm going to the ER [emergency medicine residency] and I know that I've got to perform well...perform well there and be interesting. (Nick)

...I want to go to _____. Its one of the places I want to go. They have a good surgery program...Dr. _____of the _____ filter....He's in charge of the surgery department there. In order to get to know him I took vascular surgery because he's also a vascular surgeon. (Rick)

There were selection and organization consequences that resulted from students choosing to showcase themselves at an instructional site where they might later apply for a residency. Students felt that doing this required them to perform competently in these rotations. And competent performance implied having been exposed to the discipline previously or to courses in other disciplines that supplied the students with prerequisite knowledge and skills. Robert summarizes this perspective

...You have to realize that the planning of your curriculum is extremely important in relation to national boards testing and [the] residency interviewing and application process. For example, in my case, [if] you go into emergency medicine you have to go backwards. The applications are basically in the fall of your senior year...Before you go to a place, if its outside of the system, then you should go to the same rotation inside the system. So you have to plan that in...you should do well there. And if its in emergency medicine it means that you should have cardiology, radiology, and a couple of other -ologies under your belt. You have to plan backwards like this.

The concern over improving chances of admission was also a factor in considering application to the ISP since the ISP requires completion of a mandatory research project. There was an overall perception among the students that GME programs looked favorably on this experience. In some cases the research projects impacted on clerkship selection and organization and served as another means of early exposure to interest areas that served to guide or reinforce determination of a GME specialty.

Evaluating Potential Residency Programs

Instructional site selection was influenced by the desire of students to personally evaluate some of the residency programs to which they were considering applying. Five students reported selecting rotations at specific instructional sites for the express purpose of evaluating the residency programs at those sites prior to application. Two did this on more than one occasion; one of these two was the only student to comment that there might be detrimental aspects of doing this too frequently by intimating that sampling potential residency programs more frequently would detract from his general professional education. Overall students were more discriminating in selecting an instructional site for clerkships related to their GME interests than they were for other clerkships.

Post-Graduation Concern—Preparing for Practice

A perception of what knowledge and skills would be most valuable for successful performance as interns or first-year residents also impacted on the selection of learning experiences by the ISP students. Seven of the ten student informants reported that this purpose influenced their selection of particular clinical courses in which they thought they could acquire the preferred knowledge or develop expertise in the desired skills. For the most part there was an inclination to participate in learning experiences that offered an opportunity to learn specific manual or interpretive skills rather than to master the broad knowledge of a specialty. These included the manual skills of intubating and suturing patients and the interpretive skills of reading EKG's and x-rays.

Typical comments included

...Everyone needs radiology, I think, in general, to get through internship... (Elizabeth)

Neurology would be because its heavily used in physical medicine and rehabilitation and I need to have a good basic knowledge of it. (Jessie, who was pursuing specialization in physical medicine and rehabilitation)

Infectious disease, I think it would be to know a little bit because I am going to run into that in my first year as an intern and in PM&R [Physical medicine and rehabilitation] you run into it quite a bit. (Jessie)

There was no single factor that led students to believe that certain knowledge or skills would be more useful than others in preparing for their internships or residencies. Two of the students cited their first-hand clinical experiences as reasons. Jessie was considering doing a dermatology rotation as one of her remaining courses. In response to whether or not she thought she would encounter any patients with dermatology problems in her physical medicine and rehabilitation residency she replied

I saw it [dermatology problems] in PM&R and when I saw it, it just didn't seem as if I really knew it, other than how to describe it, really knew what it was. And I know I'll see it in my first year as an intern. That I'm sure of. I saw it in medicine so I'm assuming I'll see it as an intern.

In Robert's case his experience came even prior to medical school

In my case I had been in emergency rooms as an observer during EMT [emergency medical technician] training. And my role models, among my best friends who are physicians, are emergency physicians. So I kind of had an idea of what's involved in emergency medicine, and have always been interested in emergency medicine.

Information and advice obtained from others also influenced students.

I heard about that from an anesthesiologist at _____, whom I know, who's actually my sister-in-law, and she had recommended when I was a freshman, she had recommended this course. She had taken it as a medical student at _____. She's doing her anesthesiology residency at _____ now...and said that its an excellent course in emergency management of respiratory problems, but it also handled spinal cord injuries....So I thought that would be a good basic knowledge of the emergent care of the spinal cord [patient], so that when I went into rehab I'd have an idea where they were coming from. (Jessie)

I was still thinking about pediatrics [as a potential residency] at the time and a friend of mine who's a pediatrician said he was always sorry he didn't take adult cardiology [because of its utility to pediatrics], and I said alright, I'll take adult cardiology. (Pamela)

Concern for practice preparation did not explicitly extend beyond a focus on internship or the first year of residency, however. There were no cases of students reporting wanting to acquire knowledge or skills that would prepare them for practice beyond that point.

Discussion

This study demonstrates the influence of factors related to medical students' impending GME on the design of individualized curricula. That GME concerns influenced the curricula of these students was not an entirely unexpected finding in light of current trends toward specialization in medicine and competitive admission to residency programs. Swanson (1985) warned that these trends were leading to an excessive preoccupation by medical students "with gaining a position in a graduate medical education program of their choice" and dubbed this phenomenon the "preresidency syndrome." Evidence for the syndrome had been mostly anecdotal until the report of a survey conducted by Swanson and Tudor (1986). Their results confirmed Swanson's earlier suppositions about the influence of GME on students' curricula and its detriment to their general medical education. Smith (1988) also found evidence to support Swanson's contentions in an investigation of the curricular patterns of medical students. These works, however, were based on an assumption that students' curricular emphasis on GME was based primarily on the desire of students to improve their chances for admission to competitive residency programs. The questions used in the Swanson and Tudor survey (1986), for example, are biased in favor of obtaining information related mostly to the residency application process. It is assumed in the Smith (1988) study that the curriculum patterns encountered are also related solely to the application to and pursuit of residencies.

The present study supports certain features of the preresidency syndrome and emphasizes the

importance of GME concerns as a major influence on medical student curriculum design. However, it indicates that these concerns are heterogeneous in nature and are not only related to gaining admission to residency programs, but also to determining or confirming a professional career path and preparing for the next level of medical practice. The heterogeneous nature of GME concerns behooves future researchers to take this variety into account when investigating and explaining student curricular patterns.

One important difference between this study and the others above was the nature of the study population. The ISP allowed students considerable latitude to address their GME concerns earlier in their education rather than wait until time was at a premium in their final year. Data gathered for the Swanson and Tudor (1986) and Smith (1988) studies, however, came from students in traditional curricula. By having the opportunity to address GME concerns earlier, ISP students were freed to fill in gaps in their general medical education later—at a time when this education had more relevance.

In a broader sense this research illustrates what makes curricular sense from the perspectives of a group of professions students and indicates their perspectives are not always congruent with the design of traditional curricula. One of the major decisions made by undergraduate medical students, and one with potentially lifelong consequences with regard to their career biography, is to determine a career path defined by a choice of generalized or specialized future practice. If opting for the latter, another decision must be made as to the type of specialized practice. This study indicates that for students who are uncertain of their career paths by the time they enter their clinical experiences, flexibility within the curriculum facilitates informed decisions. It also suggests that after choosing a career path students become focused on access to specialized education and practice preparation issues and tailor their curricula to address these, if given the opportunity to do so. Deferring some general professional education courses until a student has selected a career path may prove beneficial by making those courses more relevant to the student. The study implies that restricting electives to the latter stages of clinical experience or reducing elective time may be detrimental to the ability of students effectively to select a career path and address diverse future career concerns.

Notes

1. The names of students used in this paper are pseudonyms selected by them prior to the collection of interview data.
2. The major clerkships were medicine, obstetrics/gynecology, pediatrics, psychiatry and surgery of 12, 8, 8, 8 and 12 weeks duration, respectively.

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